

ZERO EMISSION BUS REGULATION



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Today's Presentation

- ◆ Urban Transit Bus Regulation / Zero-Emission Bus Regulation
- ◆ Status
- ◆ Recommendations

Urban Transit Bus Regulation

- ◆ Adopted February 2000
 - ◆ Zero-Emission Bus Demonstration & Purchase Requirements
 - ◆ New Standards for Urban Bus Engines
 - ◆ Fleet Rule for Transit Agencies
 - ◆ Dual Path
 - ◆ NOx & PM Reductions

Zero Emission Bus Regulation Background

- ◆ Goal was to encourage a fleet dominated by zero emission vehicles
- ◆ Fuel Cell Buses had demonstrated ability to meet performance needs
- ◆ Fuel cell manufacturers anticipated bus cost to be roughly equivalent to overhead trolley by 2004

Zero Emission Bus Regulation Background

- ◆ Fuel cell bus applications would lead light duty applications
 - ◆ Buses could better handle size and weight requirements of initial fuel cells
 - ◆ Buses operated and serviced by trained staff
 - ◆ Buses could be centrally fueled

Zero Emission Bus Regulation

- ◆ ZEB = Hydrogen-fuel Cell, Electric Trolley, or Battery Electric Bus
- ◆ ZEB Demonstration Project
 - ◆ Diesel Path Transit Agencies >200 buses
 - ◆ Three ZEBs per Agency by 7/1/2003
- ◆ ZEB Purchase Requirements
 - ◆ Diesel Path: 15% 2008-2015
 - ◆ Alternative Fuel Path: 15% 2010-2015

Affected Transit Agencies

Transit Agency	Fuel Path	January 1, 2005	15 %
Long Beach Transit	D	191	29
Golden Gate Transit	D	221	33
San Mateo County Transit District	D	347	52
Santa Clara Valley Transportation Authority	D	531	80
Alameda/Contra Costa Transit	D	672	101
San Francisco Municipal Railway	D	893	134
North County Transit District	A	155	23
Santa Monica Big Blue Bus	A	174	26
Omnitrans	A	176	26
Sacramento Regional Transit District	A	253	38
Foothill Transit	A	306	46
San Diego Metropolitan Transit System	A	451	68
Orange County Transportation Authority	A	612	92
Los Angeles County MTA	A	2563	384

ZEB Regulation Modifications - June 2004

- ◆ Changed Implementation Deadlines
 - ◆ Operation by February 28, 2006 (was July 1, 2003)
 - ◆ Preliminary Report by July 31, 2005
 - ◆ Final Report by July 31, 2007 (was January 31, 2005)
- ◆ Require Three Fuel Cell Buses per demonstration (was three per participant)

ZEB Demonstration Status

- ◆ Two required ZEB demonstrations in process
 - ◆ Santa Clara Valley Transit Transportation Authority and San Mateo County Transit District
 - ◆ Alameda/Contra Costa Transit District and Golden Gate Bridge Highway and Transportation District
- ◆ One voluntary ZEB demonstration in process
 - ◆ Sunline Transit in Palm Springs
 - ◆ One fuel cell bus
 - ◆ One hydrogen Internal Combustion bus

ZEB Demonstration Status

- ◆ FCB demonstrations on current regulatory schedule
- ◆ FCB are operational meeting street performance goals
- ◆ FCB are quieter than conventional diesel or CNG buses
- ◆ Public response has been positive or neutral

ZEB Challenges

- ◆ Current Bus cost greater than anticipated
 - ◆ (Positive news - Next bus of current AC Transit release likely to be $\sim 1/3$ less costly)
- ◆ Reliability
- ◆ Availability
- ◆ Fuel cell service life
- ◆ Fueling infrastructure

ZEB Demonstration Conclusion

- ◆ Buses have demonstrated positive operating performance and public acceptance
- ◆ Fuel Cell buses are feasible but not yet commercial
- ◆ Next generation fuel cell bus will likely be a fuel cell dominant hybrid

ZEB Regulation Proposed Modifications

- ◆ Goal remains to get full size Zero Emission Buses out as quickly as possible
- ◆ Modify purchase requirement
 - ◆ Require a second demonstration from Diesel Path transit agencies starting in 2008
 - ◆ Require a demonstration from Alternative Fuel Path transit agencies starting in 2010
 - ◆ Allow shorter buses to substitute for some of the required urban buses

ZEB Regulation

Additional Considerations

- ◆ Demonstration required to use “Urban Bus”
- ◆ Allow multi agency partnership for Urban bus demonstration
- ◆ Provide status report to the Board in 2009 and 2011
- ◆ Fully implement purchase requirements 2012

Next Steps

- ◆ ARB will continue current technology review
- ◆ Collect additional input from transit agencies
- ◆ Second workshop in November?
- ◆ January/February Release of Staff Report
- ◆ February/March Board Hearing?

Additional Consideration

- ◆ Form state wide fuel cell bus working group
 - ◆ Coordinate and leverage statewide effort
 - ◆ Share technology leanings
 - ◆ Discuss resource options

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